

## Unliving Proof – Teacher Pre-visit information

### Concepts

When scientists cannot directly observe an object of study, they study using clues. In this program, students examine different native animal skulls and their characteristics to determine if the skull belongs to an herbivore, carnivore or omnivore and also whether the skull belongs to a predator or prey species. Students then use a dichotomous key to ascertain the exact mammal to which the skull belongs.

### Program Activities

During the indoor introduction, students are given a mammal skull and are challenged to use observation, measurements, field guides and a dichotomous key to determine the identity and lifestyle of the animal to which their skull belongs.

During the outdoor hike, students will look for unliving proof - signs that animals have visited the nature center grounds. Students investigate clues such as tracks and scat to deduce an animal's presence though the animal itself is absent. We will also look for homes of animals near our trail.

### Previsit Suggestions

Read *Animal Tracks and Signs: Track Over 400 Animals from Big Cats to Garden Birds* by Jinny Johnson

Or read *Mammal Tracks and Sign of the Northeast* by Diane K. Gibbons

Print out mammal tracks from the internet and have students try to guess to which animal they belong. <http://www.bear-tracker.com/mammals.html> or <http://mdc.mo.gov/discover-nature/common-plants-and-animals/mammals/animal-tracks> are some websites to start you on your tracking adventure!

Generate a list with your students of mammals native to Howard County. See how many you can list!

### Vocabulary

**Herbivore** – an animal that eats only plants

**Carnivore** – a flesh and meat-eating animal

**Omnivore** – an animal that eats both plants and animals, or eats dead flesh, called carrion

**Predator** – an animal that hunts and seizes other animals for food

**Prey** – An animal that is hunted or caught for food

**Dichotomous Key** – A reference tool where a series of alternative choices leads to the identification of a species

## *Unliving Proof – Teacher Post-visit information*

Dear Teacher,

We hope you enjoyed your recent field trip to the Robinson Nature Center. To help with follow-up in the classroom, we have developed the following post-visit materials:

- 1) Follow-up discussion
- 2) Follow-up activities

### Follow-up Discussion

- 1) What three main characteristics did we use to determine the identity of the skulls?
  - a. Teeth types & absence or presence of sagittal crest
  - b. Eye placement
  - c. Spinal column placement
- 2) What are the three kinds of teeth?
  - a. Incisors
  - b. Canines
  - c. molars
- 3) How does a sagittal crest help a predator?
  - a. The jaw muscles of animals with sagittal crests attach to the crest itself. This allows for much larger muscles, and much more powerful jaws (the type that could crunch through bone if it needed to.)
- 4) What are some signs that animals have been present in an area?
  - a. Scat
  - b. Tracks
  - c. Homes
  - d. Other items – hair, exoskeleton, antler sheds, buck rubs, owl pellets, browse lines
- 5) Name some herbivorous mammals native to Howard County.  
Whitetail Deer, Beaver, Woodchuck, Muskrat, Grey Squirrel, Cottontail rabbit
- 6) Name some carnivorous mammals native to Howard County.  
Eastern Mole, Mink, Coyote, Grey Wolf, Skunk, Domestic Cat, Fox
- 7) Name some omnivorous mammals native to Howard County.  
Raccoon, Black Bear, Opossum

### Follow-up Activities

Have students go outside to a snowy or muddy place, or a outdoor basketball court with puddles and have them experiment to find out:

- What is the difference in track patterns between a hopping, jumping and walking student?
- How can you tell from looking at a track, whether the student who made it was running or walking?
- Can you tell which direction the student was moving from the “drag marks” or other footprints?
- How would a tail track look? Attach a jump rope to the back of a belt and find out.

Use one of the following activities to review tracks. Have students try to identify the tracks on paper.

- Match the Animal Paw Prints
- Match the Animal Track
- Making Tracks Maze
- Animal Tracks



**Match the animal paw prints.**

Print out and draw a line from the animal name to the print.



Raccoon

Great Blue Heron



Porcupine



Skunk

Gray Fox



Red Tailed Hawk



Great Horned Owl

Bobcat



**Match the animal paw prints.**

**Print out and draw a line from the animal name to the print.**

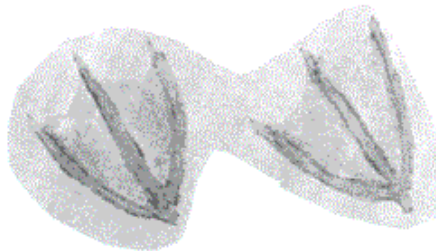
Answer Key:



# Match the Animal Track



A. \_\_\_\_\_



B. \_\_\_\_\_



C. \_\_\_\_\_



D. \_\_\_\_\_



F. \_\_\_\_\_



E. \_\_\_\_\_



G. \_\_\_\_\_

- |                |
|----------------|
| Mule Deer      |
| Duck           |
| Rattlesnake    |
| Skunk          |
| Lizard         |
| Least Chipmunk |
| Coyote         |
| Bobcat         |



H. \_\_\_\_\_



Answer Key:

# Match the Animal Track



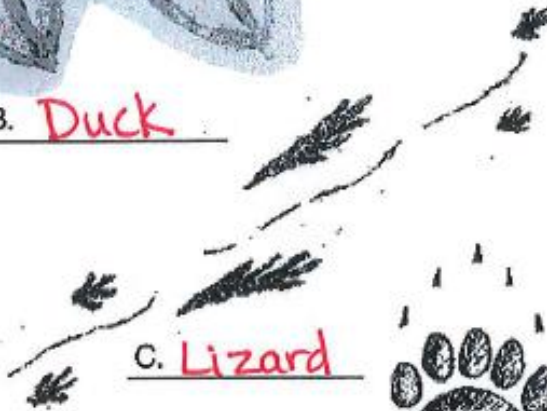
A. Mule Deer



B. Duck



D. Bobcat



C. Lizard



E. Skunk



F. Rattlesnake



G. Chipmunk

Mule Deer  
Duck  
Rattlesnake  
Skunk  
Lizard  
Least Chipmunk  
Coyote  
Bobcat



H. Coyote

## Making Tracks!



Animal footprints, called tracks, can tell stories to a careful observer. Using the guide below, see if you are able to read the story these woodland animal tracks tell!



Bobcat



Raccoon



Groundhog



Opossum



Skunk



Red Fox

Who crossed the stream? \_\_\_\_\_ and \_\_\_\_\_.

There are \_\_\_\_\_ raccoon footprints.

Which other animal tracks do the groundhog tracks encounter? \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.

Do you think the bobcat was walking, running, or leaping? (Watch a housecat for some clues!)

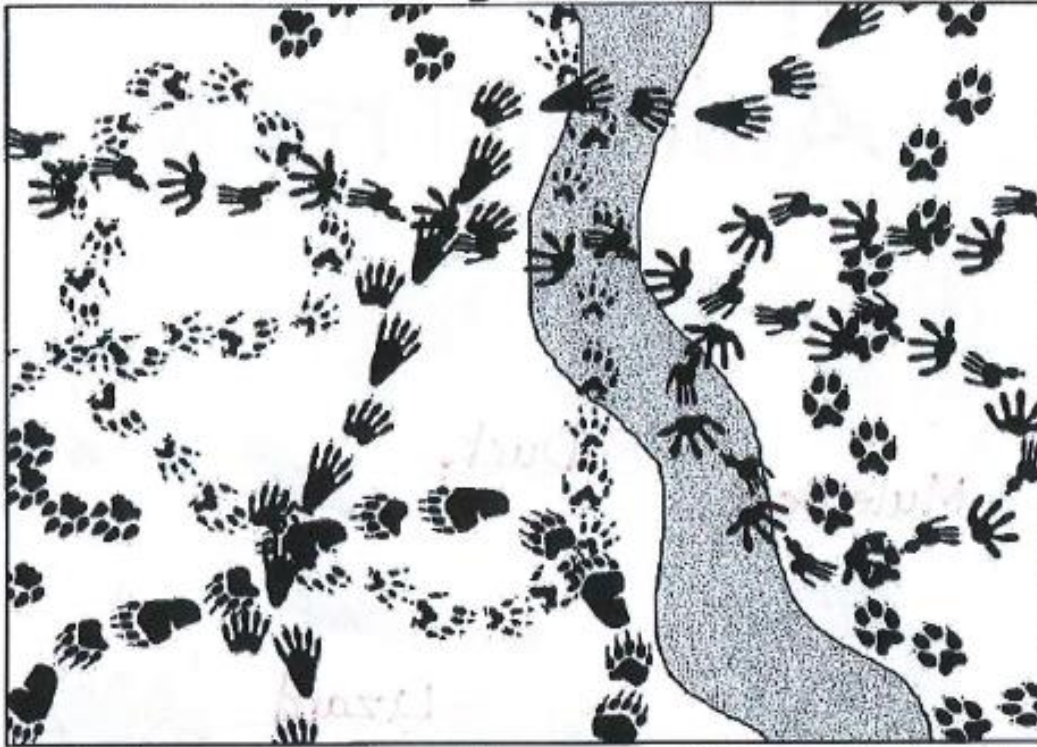
Make up your own story about these animals and the stream.

What story would your footprints through Chimney Rock Park tell?



## Answer Key:

## Making Tracks!



Animal footprints, called tracks, can tell stories to a careful observer. Using the guide below, see if you are able to read the story these woodland animal tracks tell!



Bobcat



Raccoon



Groundhog



Opossum



Skunk



Red Fox

Who crossed the stream? Raccoon and Opossum

There are 17 raccoon footprints.

Which other animal tracks do the groundhog tracks encounter? Skunk, Opossum, and Raccoon.

Do you think the bobcat was walking, running, or leaping? (Watch a housecat for some clues!) walking

Make up your own story about these animals and the stream.

What story would your footprints through Chimney Rock Park tell?